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(54) SYNTHETIC QUARTZ GLASS AND ITS EVALUATION

(57)Abstract:

PROBLEM TO BE SOLVED: To simply and quantitatively carry out an evaluation by irradiating synthetic quartz glass with ultraviolet rays in a specific wavelength region, determining the ratio of the fluorescent emission intensity to the produced scattered light intensity and evaluating the fluorescent emission intensity from the resultant ratio.

SOLUTION: A synthetic quartz glass used for light in a wavelength region ranging from the ultraviolet region to the vacuum ultraviolet region is irradiated with ultraviolet rays in a wavelength region of 150-400 nm to determine the ratio R of the fluorescent emission intensity to the scattered light intensity produced from the synthetic quartz glass by the ultraviolet irradiation. When the R is ≤ 0.01 , preferably ≤ 0.001 , the synthetic quartz glass is evaluated as suitable for an optical member. Furthermore, the OH group concentration in the synthetic quartz glass is ≤ 500 ppm from the viewpoint of suppressing the red fluorescent emission and the total concentration of alkali metals, alkaline earth metals and transition metals is ≤ 5 ppb from the viewpoint of suppressing the green fluorescent emission and yellow fluorescent emission. The oxygen excessive type defects are not contained at all from the viewpoint of suppressing the red fluorescent emission and the oxygen deficient type defects are substantially uncontained from the viewpoint of suppressing the blue fluorescent emission.

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